TUGAS PERTEMUAN 18

STATISTIKA DESKRIPTIF

NAMA : MUKHAMAD IKHSANUDIN

NIM : 082011633086

PROGRAM STUDI S1 SISTEM INFORMASI

FAKULTAS SAINS DAN TEKNOLOGI

UNIVERSITAS AIRLANGGA

2021

Distribusi Kontinu

1. Distribusi Uniform
2. Distribusi Normal
3. Distribusi t
4. Distribusi Chi Squared
5. Distribusi F
6. Distribusi Exponensial
7. Distribusi Weibull
8. Distribusi Gamma
9. Distribusi Beta

Buatlah project R yang memuat Notebook berisi untuk masing-masing distribusi (ada 9 distribusi seperti tercantum di atas) :

1. Hitung cdf-nya → berikan 3 contoh
2. Hitung pdf-nya → berikan 3 contoh
3. Carilah contoh kasus dan hitung E(X) dan Var(X)
4. Generate distribusinya sebanyak 5000 data dan gambar histogramnya → lakukan sebanyak 5 kali dengan parameter yang berbeda (usahakan bentuk gambarnya berbeda)

==

File yang di-upload berupa file pdf yang berisi :

1. Screenshot working windows (lihat contoh di halaman terakhir dokumen ini)
2. Isinya Notebook R → di copas
3. Output yang dihasilkan oleh Notebook R dengan penjelasan seperlunya

==

upload di Aula

dan

email ke : eto-w@fst.unair.ac.id

subject : distribusi kontinu

==

RNotebook

```
# 1. cdf
# Uniform
punif(1, min=0, max=1)
punif(20, min=0, max=50)
punif(50, min=0, max=200)

# Normal
pnorm(10,15,5)
pnorm(20, 45, 10)
pnorm(50, 100, 25)

# T
pt(12, 5, 10)
pt(25, 10, 20)
pt(100, 50, 125)

# Chi Squared
pchisq(10, 20, 2)
pchisq(20, 25, 5)
pchisq(25, 5, 25)

# F
pf(10, 15, 40, 100)
pf(5, 20, 55, 75)
pf(6, 26, 75, 80)

# Exponensial
pexp(1, 1)
pexp(5, 0.75)
pexp(15,0.25)

# Weibull
pweibull(10, 0.25, 1)
pweibull(20, 0.75, 1)
pweibull(25, 0.1, 1)

# Gamma
pgamma(5, 1, 1/2)
pgamma(15, 2, 1/6)
pgamma(100, 20, 1/4)

# Beta
pbeta(0.2, 5, 10, 1)
pbeta(0.5, 10, 20, 2)
pbeta(0.8, 10, 15, 5)
```

```
# 2. pmf
# Uniform
dunif(3, min=0, max=15)
dunif(10, min=0, max=80)
dunif(100, min=0, max=250)

# Normal
dnorm(2, 2.5, 0.5)
dnorm(5, 8, 1)
dnorm(15, 12, 2)

# T
dt(1, 10, 5)
dt(5, 2, 10)
dt(20, 2, 1)

# Chi Squared
dchisq(2, 1, 10)
dchisq(5, 10, 1.5)
dchisq(15, 2, 25)

# F
df(2, 5, 10, 1)
df(20, 10, 2, 25)
df(125, 5, 1, 10)

# Exponensial
dexp(1, 1)
dexp(25, 0.25)
dexp(50, 0.1)

# Weibull
dweibull(5, 1, 2)
dweibull(15, 2, 10)
dweibull(25, 2, 100)

# Gamma
dgamma(7.5, 2, 1/5)
dgamma(25, 1, 1/10)
dgamma(20, 5, 1/20)

# Beta
dbeta(0.5, 1, 2, 5)
dbeta(0.25, 5, 4, 10)
dbeta(0.8, 2, 8, 20)

# 3. Kasus
```

```
# Uniform
# Dari 5 kandidat, akan dipilih 1 orang menjadi ketua.
Tentukan nilai E(x) dan Var(x)!
#Penyelesaian
E = (1+2+3+4+5)/5
cat('Nilai E(x) = ',E)
Var = ((1-3)^2+(2-3)^2+(3-3)^2+(4-3)^2+(5-3)^2)/5
cat('Nilai Var(x) = ',Var)

# Normal
# Dalam suatu kelas terdapat 40 siswa, 9 anak diantaranya akan
dijadikan sampel pengukuran tinggi badan. Didapatkan data
sebagai berikut: 165, 170, 169, 168, 156, 160, 175, 162, 169.
Hitunglah E(x) dan Var(x) nya!
#Penyelesaian
E = (165+170+169+168+156+160+175+162+ 169)/9
cat('Nilai E(x) = ',E)
Var = sqrt(((165-E)^2+(170-E)^2+(169-E)^2+(168-E)^2+(156-
E)^2+(160- E)^2+(175-E)^2+(162-E)^2+(169-E)^2)/(9-1))
cat('Nilai Var(x) = ',Var)

# T
# Suatu sampling terhadap air sungai di Kota A dilakukan oleh
Dinas Kesehatan Kota A untuk menentukan apakah rata-rata jumlah
bakteri per unit volume air di sungai tersebut masih di bawah
ambang batas aman yaitu 200. Kemudian, peneliti di dinas
tersebut mengumpulkan 10 sampel air per unit volume dan
menemukan jumlah bakterinya 175, 190, 215, 198, 184, 207, 210,
193, 196, dan 180. Lakukan pengujian menggunakan taraf
signifikansi α=5%.
#Penyelesaian
data.t <- c(175, 190, 215, 198, 184, 207, 210, 193, 196, 180)
x <- mean(data.t)
stdev <- sd(data.t)
cat('rata-rata =', x)
cat('standar deviasi =', stdev)
uji_stat <-(x-200)/(stdev/sqrt(length(data.t)))
cat('t = ', uji_stat)
pval <- pt(uji_stat,
df=length(data.t)-1)
cat('p-value = ', pval)

# Chi Squared
# Diketahui terdapat 10 mesin di suatu pabrik yang mengalami
kendala disetiap harinya. Dari data yang ada diketahui bahwa
kendala tersebut memiliki nilai λ = 0.5 tentukan nilai mean
dan variansnya!
```

```
#Penyelesaian
n = 10
lambda = 0.5
E = n + lambda
Var = n/(2^(lambda/2))
cat('Nilai E(x) = ',E)
cat('Nilai Var(x) = ',Var)

# F

# Exponensial
# Hari-hari antara kecelakaan kereta api 2000-2010 berikut
distribusieksponensial dengan rata-rata 12 hari antara setiap
kecelakaan. Jika satu terjadi pada 1 Juli setiap tahun
tertentu, berapa varians dari waktu antara kecelakaan di tahun
tersebut?
#Penyelesaian
E = 12
cat('Nilai E(x) = ',E)
Var = 1/(E^2)
cat('Nilai Var(x) = ',Var)

# Weibull
# Sebuah komponen kompresor mesin kapal selam mengalami
kegagalan dalam beberapa jam, hal tersebut akhirnya dimodelkan
sebagai variabel weibull dengan diketahui α = 1/4 dan β = 48
jam. Tentukan rata-rata waktu kegagalan dan variansnya!
#Penyelesaian
α = 1/4
β = 48
faktorial=function(a){
  f=1
  i=1
  for (i in 1:4){
    f=f*i
  }
}
cat("faktorialnya =",f,"\n")
E = 48*f
cat('Nilai E(x) = ',E,"jam")
faktorialvar=function(α){
  f1=1
  i1=1
  for (i1 in 1:(2/α)){
    f1=f1*i1
  }
}
```

```
cat("faktorialnya =",f1,"\n")
faktorial.var=function(n){
  f2=1
  i2=1
  for (i2 in 1:(2/(1/4)^2)){
    f2=f2*i2
  }
}
cat("faktorialnya =",f2,"\n")
Var = f1-f2
cat('Nilai Var(x) = ',Var)

# Gamma
#Variabel acak kontinu X yang menyatakan ketahanan suatu
bantalan peluru (dalam ribuan jam) yang diberi pembebanan
dinamik pada suatu putaran kerja tertentu mengikuti suatu
distribusi gamma dengan α = 3 dan β = 10, maka probabilitas
sebuah bantalan peluru dapat digunakan selama 30 ribu sampai
60 ribu jam dengan pembenandinamik pada putaran kerja tersebut
adalah . . .
#Penyelesaian
α =3
β =10
E = α/β
Var = sqrt(α/(β^2))
cat('Nilai E(x) = ',E)
cat('Nilai Var(x) = ',Var)

# Beta
# Bila proporsi suatu televisi merk tertentu membutuhkan
perbaikan selama tahun pertama pemakaiannya yang merupakan
suatu peubah acak berdistribusi beta dengan α = 6 dan β = 4,
tentukan nilai mean dan variansnya!
#Penyelesaian
α = 6
β = 4
E = α/(α+β)
Var = α*β/(α+β+1)*((α+β)^2)
cat('Nilai E(x) = ',E)
cat('Nilai Var(x) = ',Var)

# 4. Histogram
# Uniform
hist(runif(5000, min=0, max=1))
hist(runif(5000, min=0, max=100))
hist(runif(5000, min=50, max=1000))
hist(runif(5000, min=100, max=1000))
```

```
hist(runif(5000, min=250, max=5000))

# Normal
hist(rnorm(5000, 0.1, 0.5))
hist(rnorm(5000, 10, 0.5))
hist(rnorm(5000, 0.1, 100))
hist(rnorm(5000, 100, 25))
hist(rnorm(5000, 500, 2500))

# T
hist(rt(5000, 1, 100))
hist(rt(5000, 5, 0.5))
hist(rt(5000, 10, 100))
hist(rt(5000, 25, 2500))
hist(rt(5000, 200, 2500))

# Chi Squared
hist(rchisq(5000, 1, 1))
hist(rchisq(5000, 10, 100))
hist(rchisq(5000, 15, 4))
hist(rchisq(5000, 200, 0.5))
hist(rchisq(5000, 1000, 0.0001))

# F
hist(rf(5000, 1, 2, 0))
hist(rf(5000, 10, 15, 0.1))
hist(rf(5000, 20, 50, 20))
hist(rf(5000, 100, 150, 200))
hist(rf(5000, 2000, 1125, 0.4))

# Exponensial
hist(rexp(5000, 0.01))
hist(rexp(5000, 1))
hist(rexp(5000, 10))
hist(rexp(5000, 500))
hist(rexp(5000, 2500))

# Weibull
hist(rweibull(5000, 0.1, 1))
hist(rweibull(5000, 1, 0.1))
hist(rweibull(5000, 1, 10))
hist(rweibull(5000, 5, 100))
hist(rweibull(5000, 5, 5000))

# Gamma
hist(rgamma(5000, 1, 1/0.5))
hist(rgamma(5000, 100, 1/0.5))
```

```
hist(rgamma(5000, 500, 1/50))
hist(rgamma(5000, 1000, 1/200))
hist(rgamma(5000, 5, 1/1000))

# Beta
hist(rbeta(5000, 1, 100, 0))
hist(rbeta(5000, 1, 100, 1000))
hist(rbeta(5000, 100, 1, 1000))
hist(rbeta(5000, 20, 1000, 5000))
hist(rbeta(5000, 20, 2000, 0.001))
```

Output

```
> # 1. cdf
> # Uniform
> punif(1, min=0, max=1)
[1] 1
> punif(20, min=0, max=50)
[1] 0.4
> punif(50, min=0, max=200)
[1] 0.25

> # Normal
> pnorm(10,15,5)
[1] 0.1586553
> pnorm(20, 45, 10)
[1] 0.006209665
> pnorm(50, 100, 25)
[1] 0.02275013

> # T
> pt(12, 5, 10)
[1] 0.6248672
> pt(25, 10, 20)
[1] 0.7769818
> pt(100, 50, 125)
[1] 0.005584844

> # Chi Squared
> pchisq(10, 20, 2)
[1] 0.01788535
> pchisq(20, 25, 5)
[1] 0.1032449
> pchisq(25, 5, 25)
[1] 0.3436146

> # F
> pf(10, 15, 40, 100)
[1] 0.8128985
> pf(5, 20, 55, 75)
[1] 0.573322
> pf(6, 26, 75, 80)
[1] 0.9443998

> # Exponensial
> pexp(1, 1)
[1] 0.6321206
> pexp(5, 0.75)
[1] 0.9764823
```

```
> pexp(15,0.25)
[1] 0.9764823

> # Weibull
> pweibull(10, 0.25, 1)
[1] 0.8310714
> pweibull(20, 0.75, 1)
[1] 0.9999219
> pweibull(25, 0.1, 1)
[1] 0.7483534

> # Gamma
> pgamma(5, 1, 1/2)
[1] 0.917915
> pgamma(15, 2, 1/6)
[1] 0.7127025
> pgamma(100, 20, 1/4)
[1] 0.8664252

> # Beta
> pbeta(0.2, 5, 10, 1)
[1] 0.0994327
> pbeta(0.5, 10, 20, 2)
[1] 0.9471538
> pbeta(0.8, 10, 15, 5)
[1] 0.9999461

> # 2. pmf
> # Uniform
> dunif(3, min=0, max=15)
[1] 0.06666667
> dunif(10, min=0, max=80)
[1] 0.0125
> dunif(100, min=0, max=250)
[1] 0.004

> # Normal
> dnorm(2, 2.5, 0.5)
[1] 0.4839414
> dnorm(5, 8, 1)
[1] 0.004431848
> dnorm(15, 12, 2)
[1] 0.0647588

> # T
> dt(1, 10, 5)
[1] 0.0002072225
```

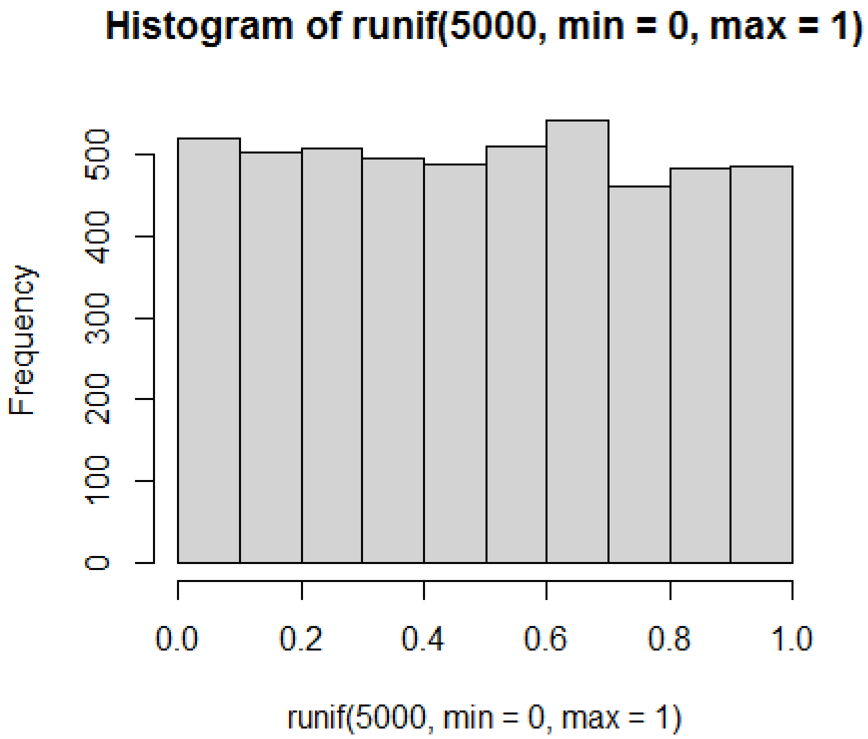
```
> dt(5, 2, 10)
[1] 0.03286455
> dt(20, 2, 1)
[1] 0.0004750578

> # Chi Squared
> dchisq(2, 1, 10)
[1] 0.03061109
> dchisq(5, 10, 1.5)
[1] 0.04541155
> dchisq(15, 2, 25)
[1] 0.02417904

> # F
> df(2, 5, 10, 1)
[1] 0.1987796
> df(20, 10, 2, 25)
[1] 0.00723183
> df(125, 5, 1, 10)
[1] 0.0004740409

> # Exponensial
> dexp(1, 1)
[1] 0.3678794
> dexp(25, 0.25)
[1] 0.0004826135
> dexp(50, 0.1)
[1] 0.0006737947

> # Weibull
> dweibull(5, 1, 2)
[1] 0.0410425
> dweibull(15, 2, 10)
[1] 0.03161977
> dweibull(25, 2, 100)
[1] 0.004697065

> # Gamma
> dgamma(7.5, 2, 1/5)
[1] 0.06693905
> dgamma(25, 1, 1/10)
[1] 0.0082085
> dgamma(20, 5, 1/20)
[1] 0.0007664155

> # Beta
> dbeta(0.5, 1, 2, 5)
```

```
[1] 1.226599
> dbeta(0.25, 5, 4, 10)
[1] 0.02551402
> dbeta(0.8, 2, 8, 20)
[1] 0.8364537

> # 3. Kasus
> # Uniform
> # Dari 5 kandidat, akan dipilih 1 orang menjadi ketua.
Tentukan nilai E(x) dan Var(x)! #Penyelesaian
> E = (1+2+3+4+5)/5
> cat('Nilai E(x) = ',E)
Nilai E(x) =  3> Var = ((1-3)^2+(2-3)^2+(3-3)^2+(4-3)^2+(5-
3)^2)/5
> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  2

> # Normal
> # Dalam suatu kelas terdapat 40 siswa, 9 anak diantaranya
akan dijadikan sampel pengukuran tinggi badan. Didapatkan data
sebagai berikut: 165, 170, 169, 168, 156, 160, 175, 162, 169.
Hitunglah E(x) dan Var(x) nya! #Penyelesaian
> E = (165+170+169+168+156+160+175+162+ 169)/9
> cat('Nilai E(x) = ',E)
Nilai E(x) =  166> Var = sqrt(((165-E)^2+(170-E)^2+(169-
E)^2+(168-E)^2+(156-E)^2+(160- E)^2+(175-E)^2+(162-E)^2+(169-
E)^2)/(9-1))
> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  5.830952

> # T
> # Suatu sampling terhadap air sungai di Kota A dilakukan
oleh Dinas Kesehatan Kota A untuk menentukan apakah rata-rata
jumlah bakteri per unit volume air di sungai tersebut masih di
bawah ambang batas aman yaitu 200. Kemudian, peneliti di dinas
tersebut mengumpulkan 10 sampel air per unit volume dan
menemukan jumlah bakterinya 175, 190, 215, 198, 184, 207, 210,
193, 196, dan 180. Lakukan pengujian menggunakan taraf
signifikansi α=5%.
> #Penyelesaian
> data.t <- c(175, 190, 215, 198, 184, 207, 210, 193, 196,
180)
> x <- mean(data.t)
> stdev <- sd(data.t)
> cat('rata-rata =', x)
rata-rata = 194.8> cat('standar deviasi =', stdev)
```

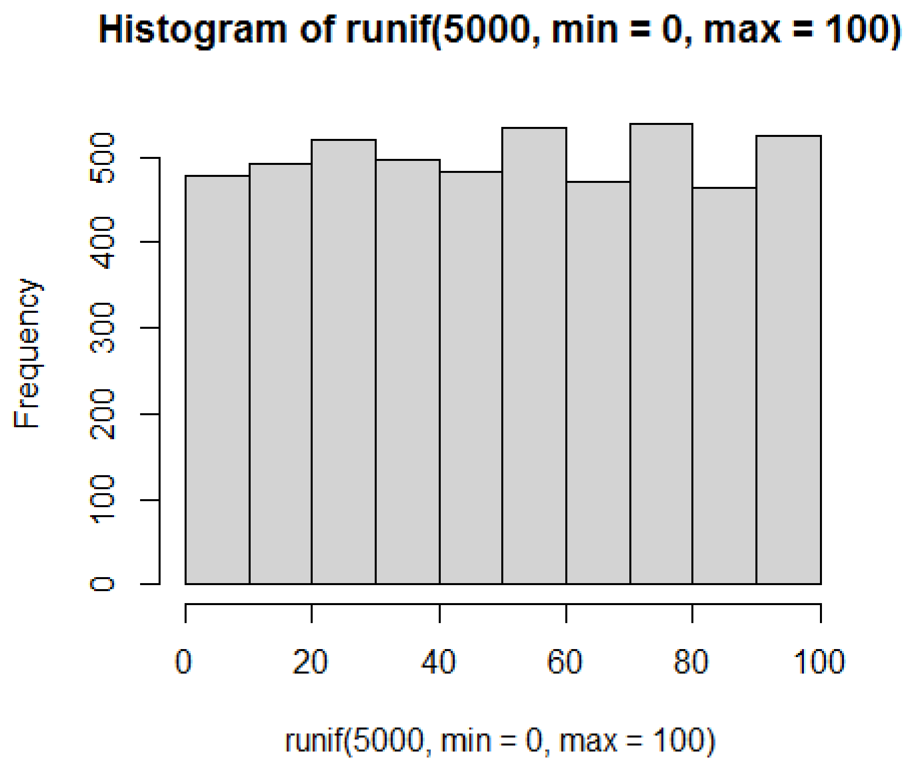
```
standar deviasi = 13.13858> uji_stat <-(x-
200)/(stdev/sqrt(length(data.t)))
> cat('t = ', uji_stat)
t =  -1.25157> pval <- pt(uji_stat,
+ df=length(data.t)-1)
> cat('p-value = ', pval)
p-value =  0.1211388

> # Chi Squared
> # Diketahui terdapat 10 mesin di suatu pabrik yang mengalami
kendala disetiap harinya. Dari data yang ada diketahui bahwa
kendala tersebut memiliki nilai λ = 0.5 tentukan nilai mean
dan variansnya!
> #Penyelesaian
> n = 10
> lambda = 0.5
> E = n + lambda
> Var = n/(2^(lambda/2))
> cat('Nilai E(x) = ',E)
Nilai E(x) =  10.5> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  8.408964

> # F

> # Exponensial
> # Hari-hari antara kecelakaan kereta api 2000-2010 berikut
distribusieksponensial dengan rata-rata 12 hari antara setiap
kecelakaan. Jika satu terjadi pada 1 Juli setiap tahun
tertentu, berapa varians dari waktu antara kecelakaan di tahun
tersebut?
> #Penyelesaian
> E = 12
> cat('Nilai E(x) = ',E)
Nilai E(x) =  12> Var = 1/(E^2)
> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  0.006944444

> # Weibull
> # Sebuah komponen kompresor mesin kapal selam mengalami
kegagalan dalam beberapa jam, hal tersebut akhirnya dimodelkan
sebagai variabel weibull dengan diketahui α = 1/4 dan β = 48
jam. Tentukan rata-rata waktu kegagalan dan variansnya!
#Penyelesaian
> α = 1/4
> β = 48
> faktorial=function(a){
+   f=1
```

```
+   i=1
+   for (i in 1:4){
+     f=f*i
+   }
+ }
> cat("faktorialnya =",f,"\n")
faktorialnya = 24
> E = 48*f
> cat('Nilai E(x) = ',E,"jam")
Nilai E(x) =  1152 jam> faktorialvar=function(α){
+   f1=1
+   i1=1
+   for (i1 in 1:(2/α)){
+     f1=f1*i1
+   }
+ }
> cat("faktorialnya =",f1,"\n")
faktorialnya = 40320
> faktorial.var=function(n){
+   f2=1
+   i2=1
+   for (i2 in 1:(2/(1/4)^2)){
+     f2=f2*i2
+   }
+ }
> cat("faktorialnya =",f2,"\n")
faktorialnya = 2.631308e+35
> Var = f1-f2
> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  -2.631308e+35

> # Gamma
> #Variabel acak kontinu X yang menyatakan ketahanan suatu
bantalan peluru (dalam ribuan jam) yang diberi pembebanan
dinamik pada suatu putaran kerja tertentu mengikuti suatu
distribusi gamma dengan α = 3 dan β = 10, maka probabilitas
sebuah bantalan peluru dapat digunakan selama 30 ribu sampai
60 ribu jam dengan pembenandinamik pada putaran kerja tersebut
adalah . . .
> #Penyelesaian
> α =3
> β =10
> E = α/β
> Var = sqrt(α/(β^2))
> cat('Nilai E(x) = ',E)
Nilai E(x) =  0.3> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  0.1732051
```

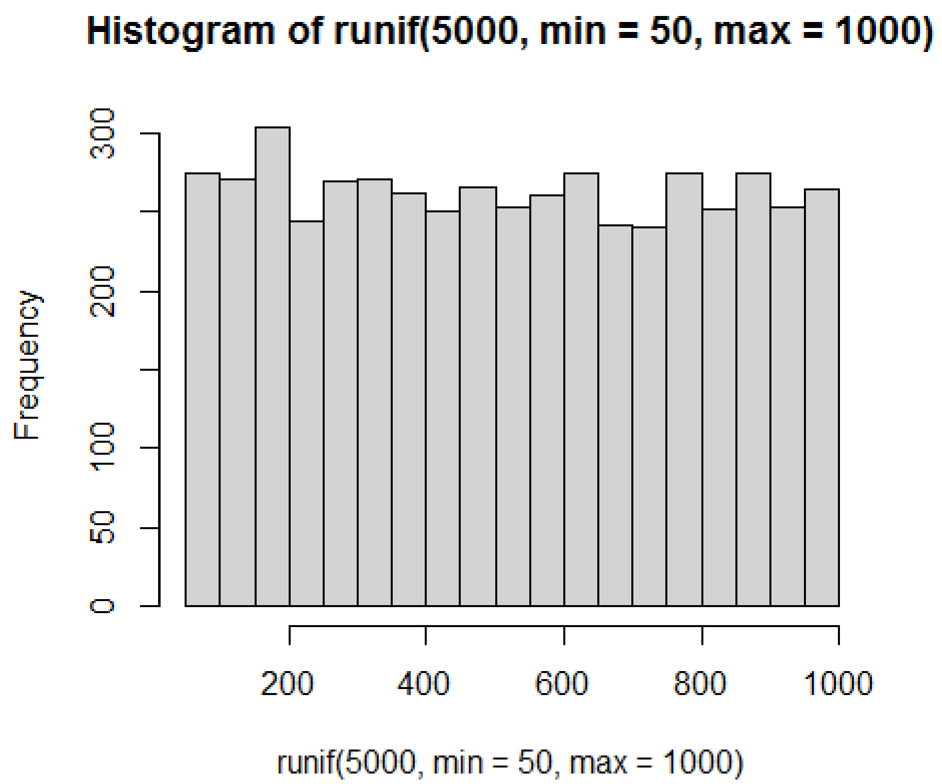
```
> # Beta
> # Bila proporsi suatu televisi merk tertentu membutuhkan
perbaikan selama tahun pertama pemakaiannya yang merupakan
suatu peubah acak berdistribusi beta dengan α = 6 dan β = 4,
tentukan nilai mean dan variansnya!
> #Penyelesaian
> α = 6
> β = 4
> E = α/(α+β)
> Var = α*β/(α+β+1)*((α+β)^2)
> cat('Nilai E(x) = ',E)
Nilai E(x) =  0.6> cat('Nilai Var(x) = ',Var)
Nilai Var(x) =  218.1818

> # 4. Histogram
> # Uniform
> hist(runif(5000, min=0, max=1))
```



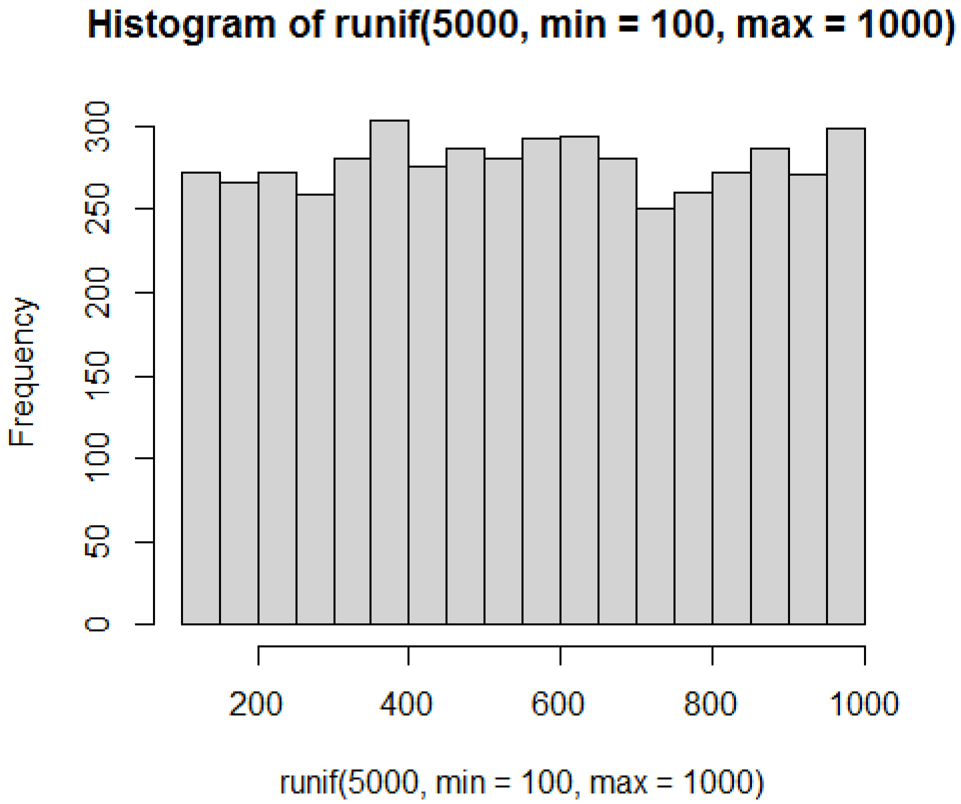

```
> hist(runif(5000, min=0, max=100))
```



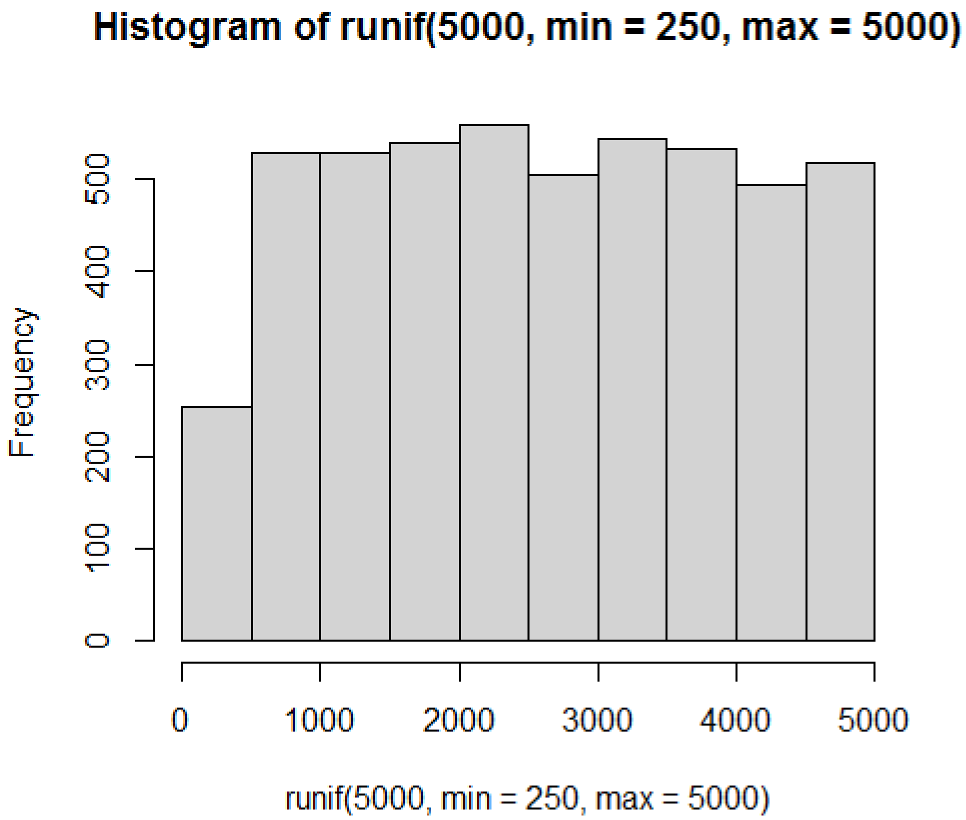

```
> hist(runif(5000, min=50, max=1000))
```



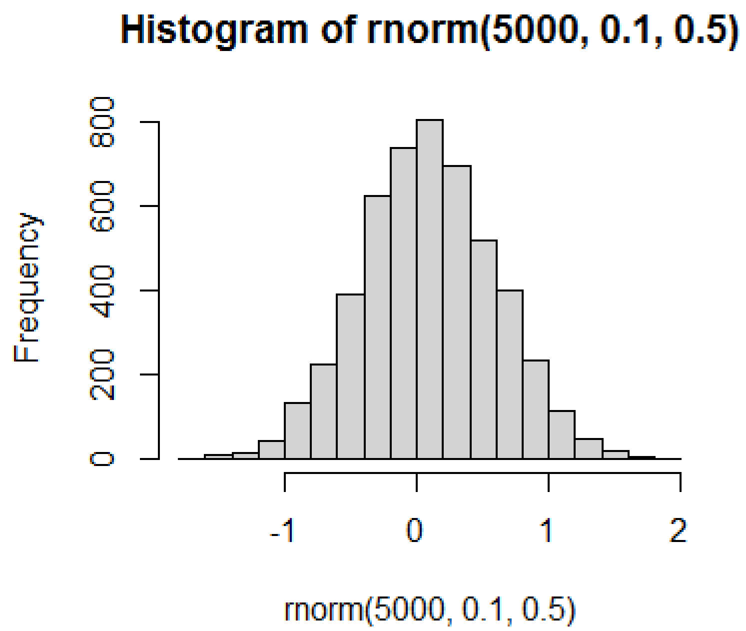

```
> hist(runif(5000, min=100, max=1000))
```



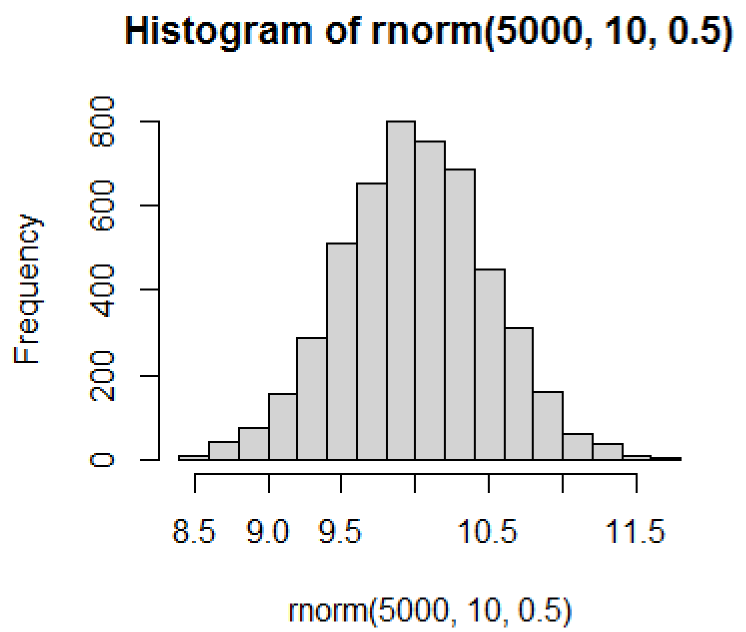

```
> hist(runif(5000, min=250, max=5000))
```



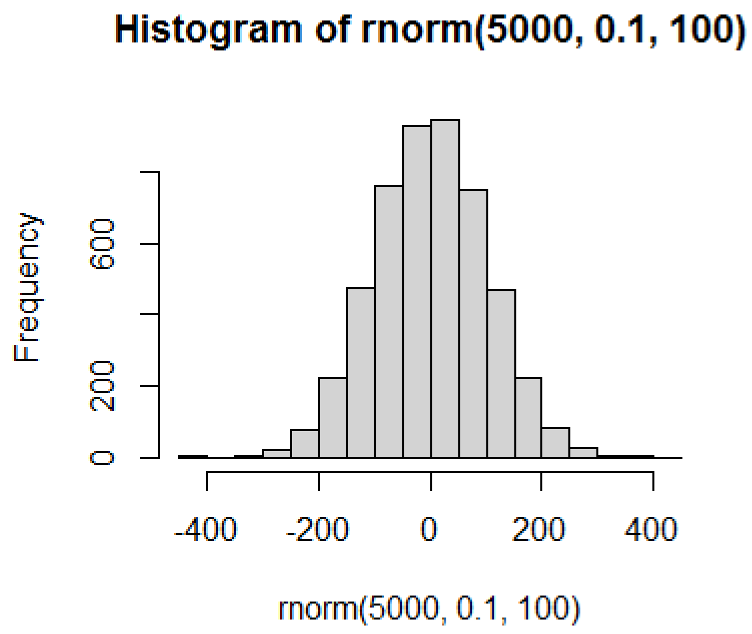
```
> # Normal
> hist(rnorm(5000, 0.1, 0.5))
```



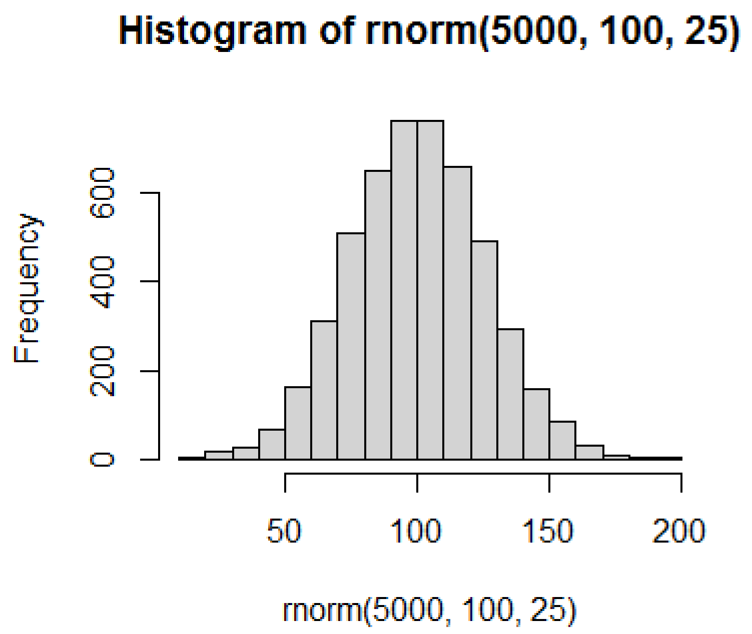

```
> hist(rnorm(5000, 10, 0.5))
```



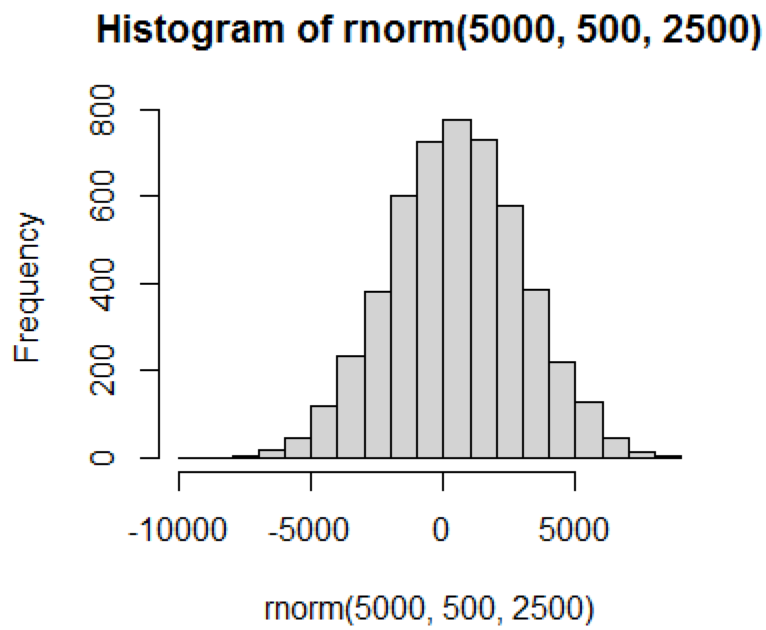

```
> hist(rnorm(5000, 0.1, 100))
```



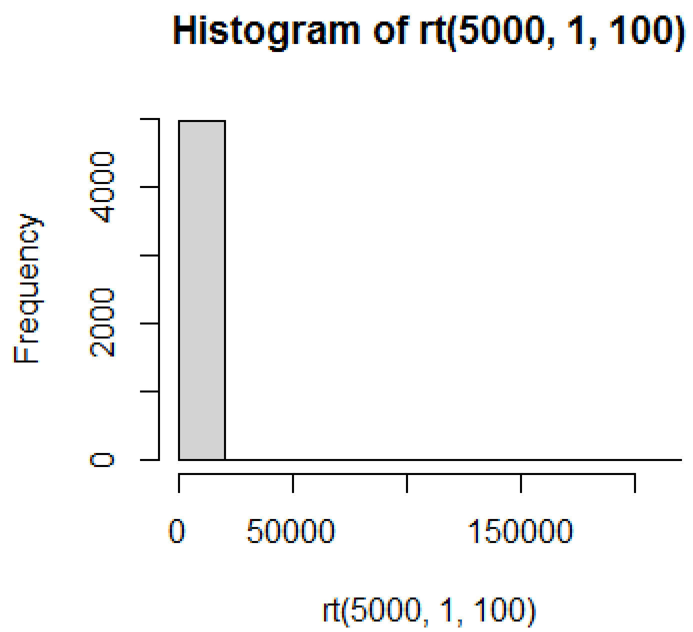

```
> hist(rnorm(5000, 100, 25))
```



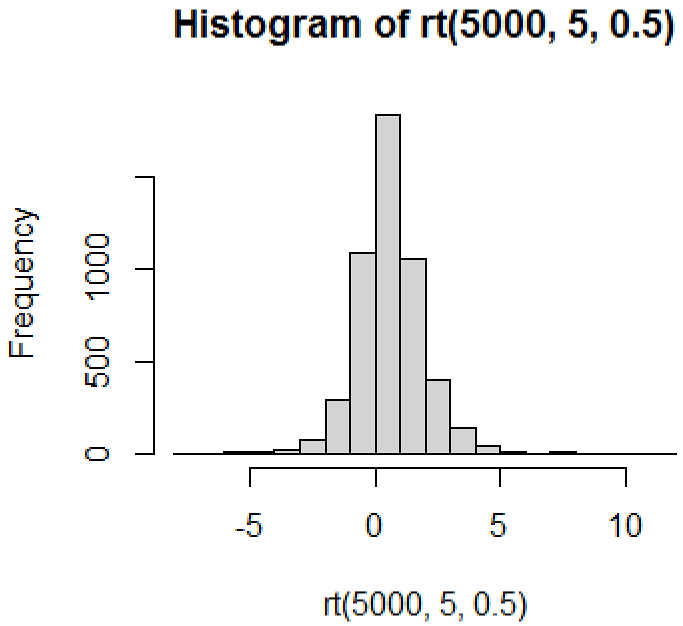

```
> hist(rnorm(5000, 500, 2500))
```



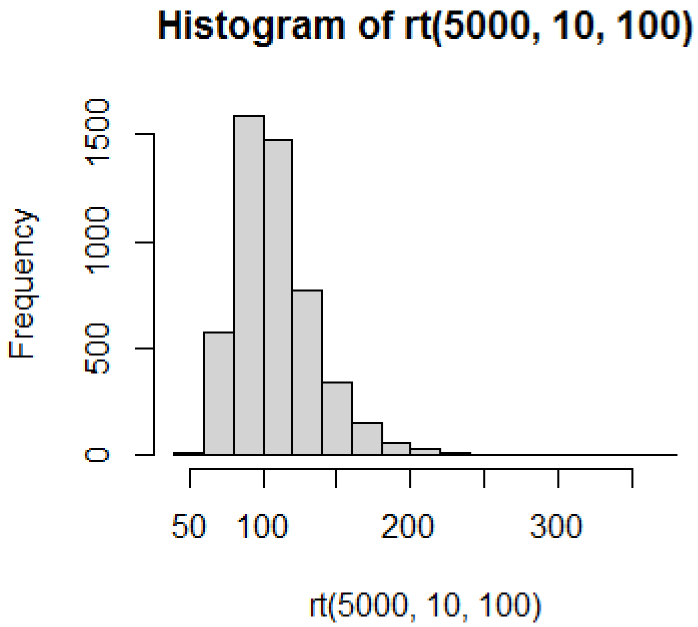

```
> # T
> hist(rt(5000, 1, 100))
```



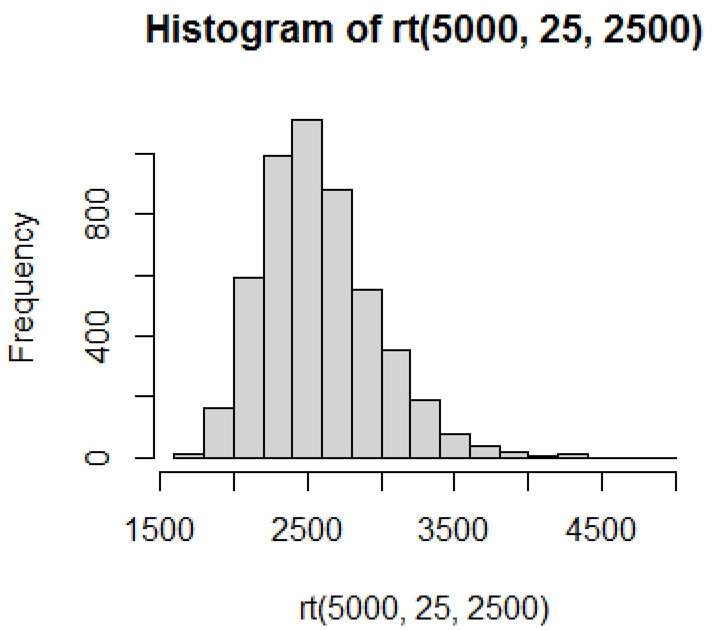

```
> hist(rt(5000, 5, 0.5))
```



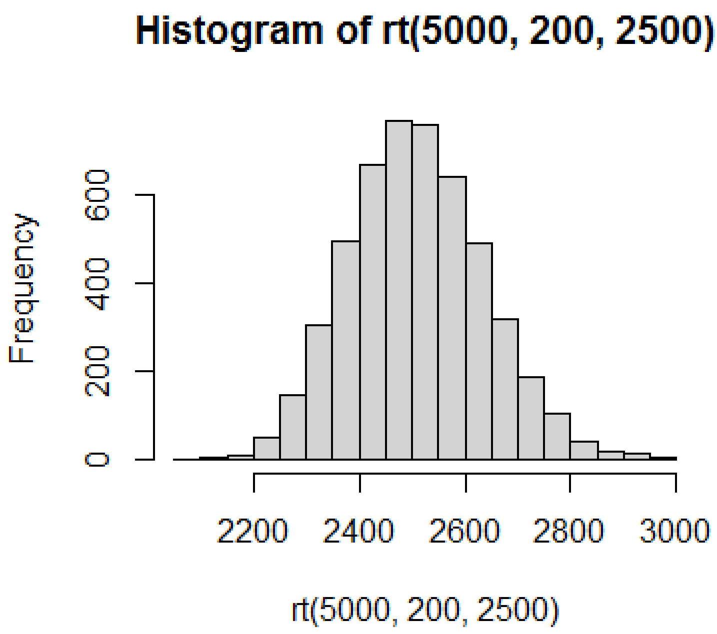

```
> hist(rt(5000, 10, 100))
```



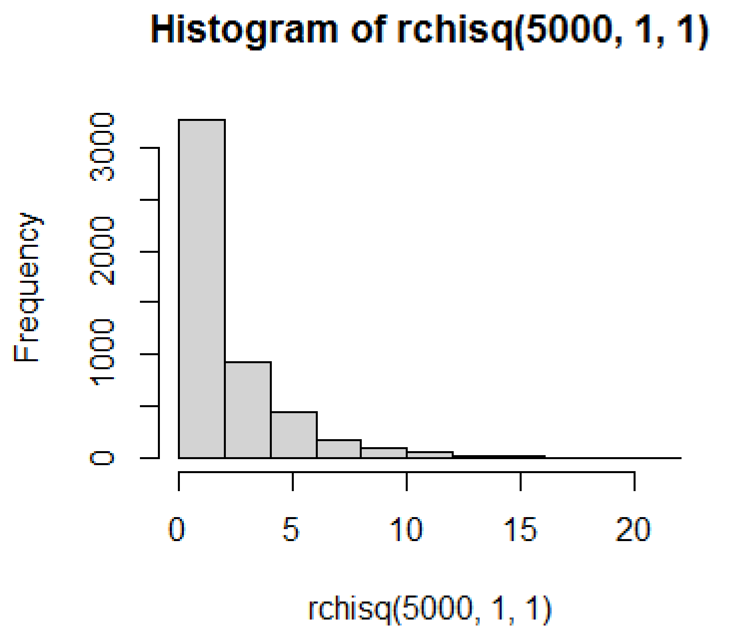

```
> hist(rt(5000, 25, 2500))
```



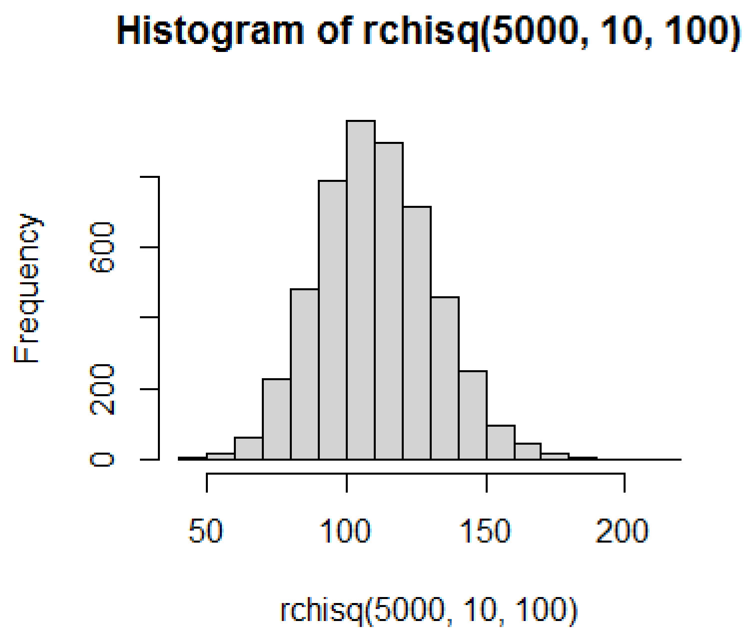

```
> hist(rt(5000, 200, 2500))
```



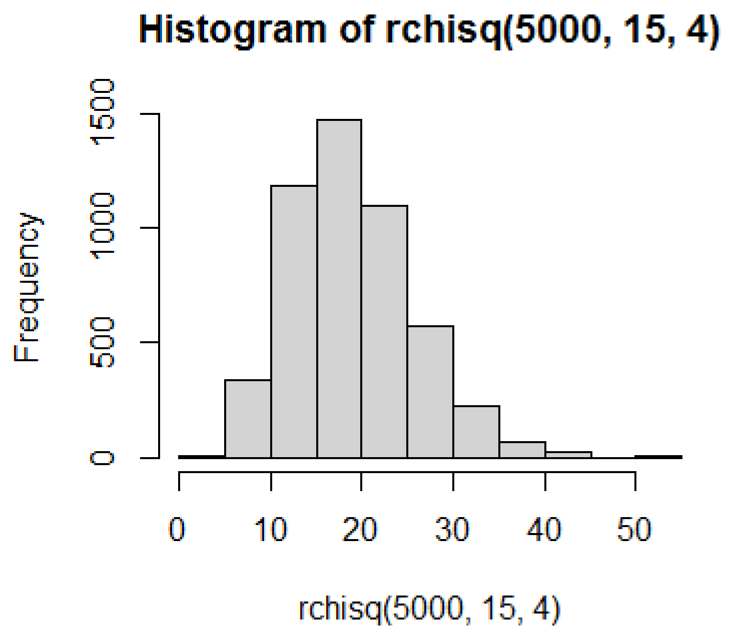

```
> # Chi Squared
> hist(rchisq(5000, 1, 1))
```



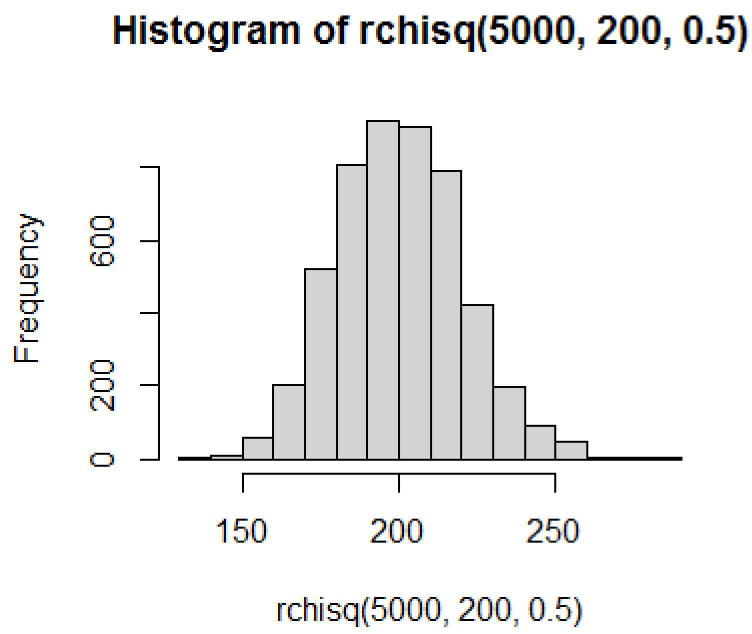

```
> hist(rchisq(5000, 10, 100))
```



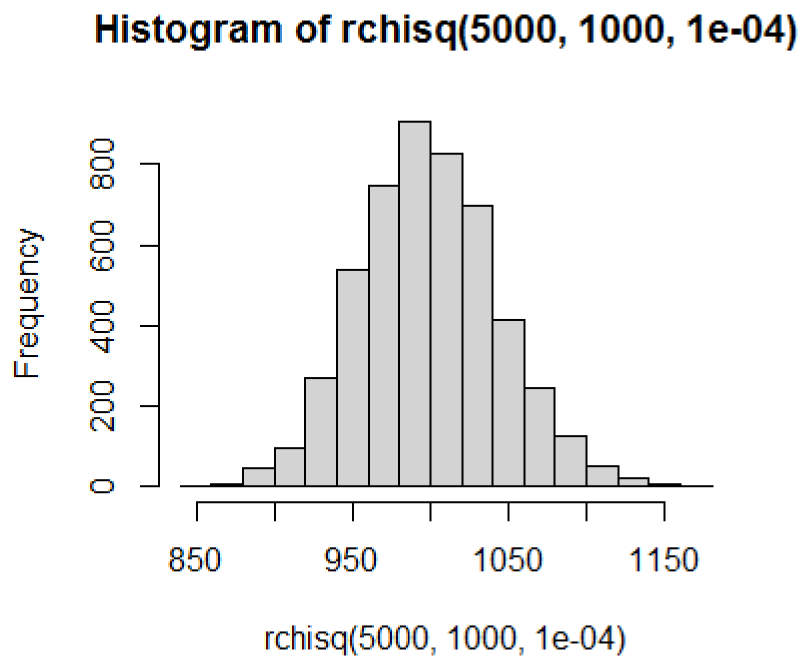

```
> hist(rchisq(5000, 15, 4))
```



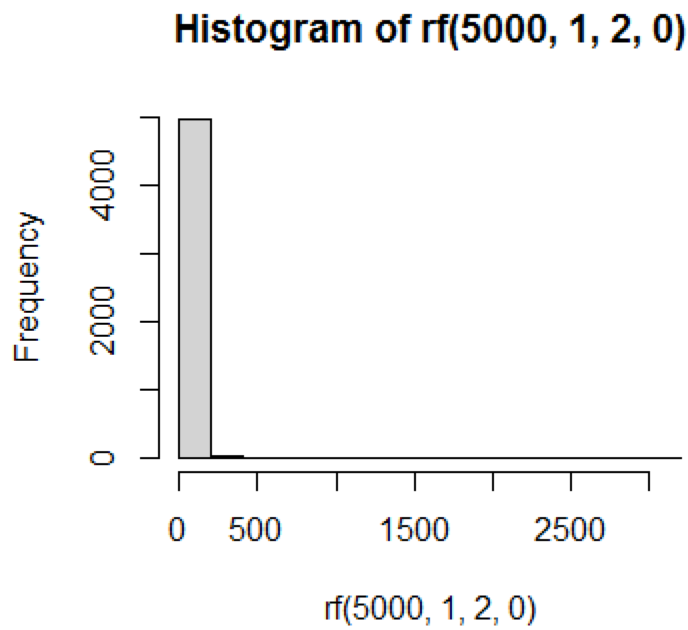

```
> hist(rchisq(5000, 200, 0.5))
```



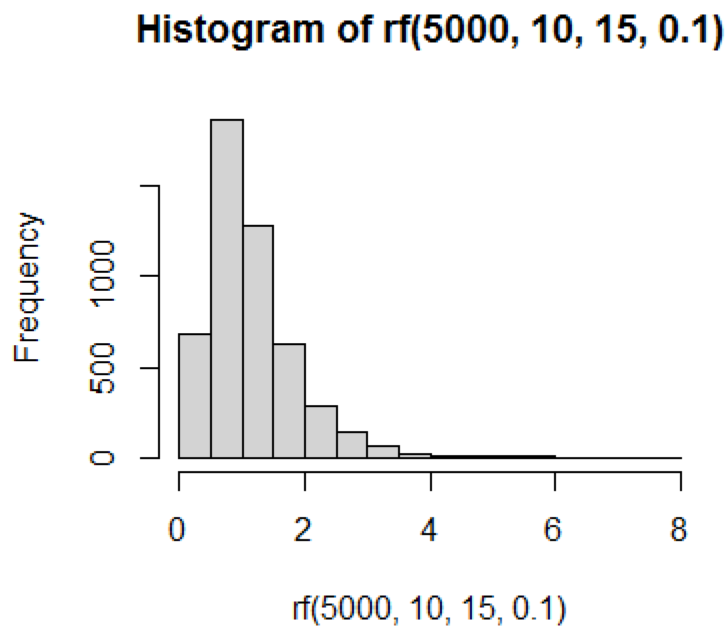

```
> hist(rchisq(5000, 1000, 0.0001))
```



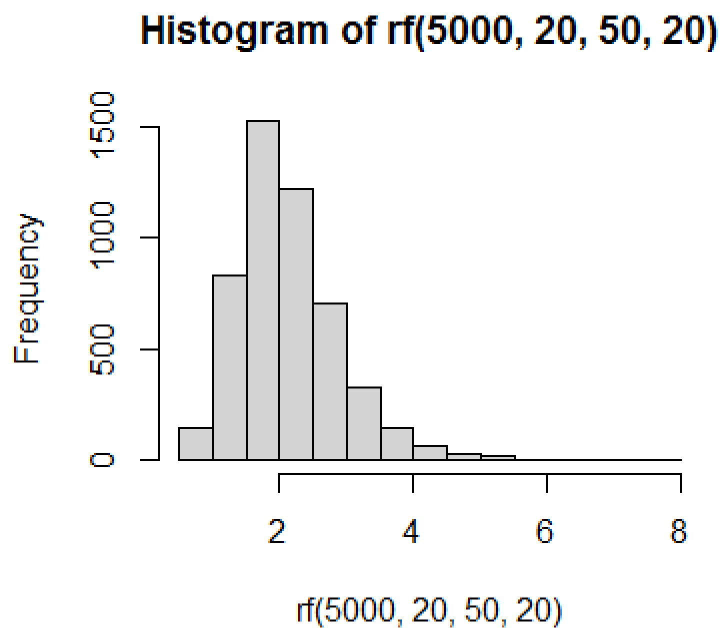

```
> # F
> hist(rf(5000, 1, 2, 0))
```



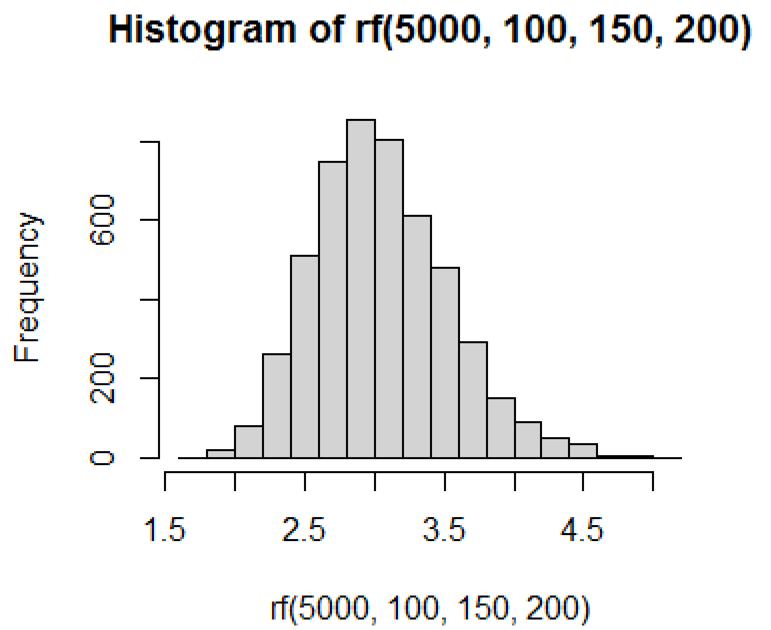

```
> hist(rf(5000, 10, 15, 0.1))
```



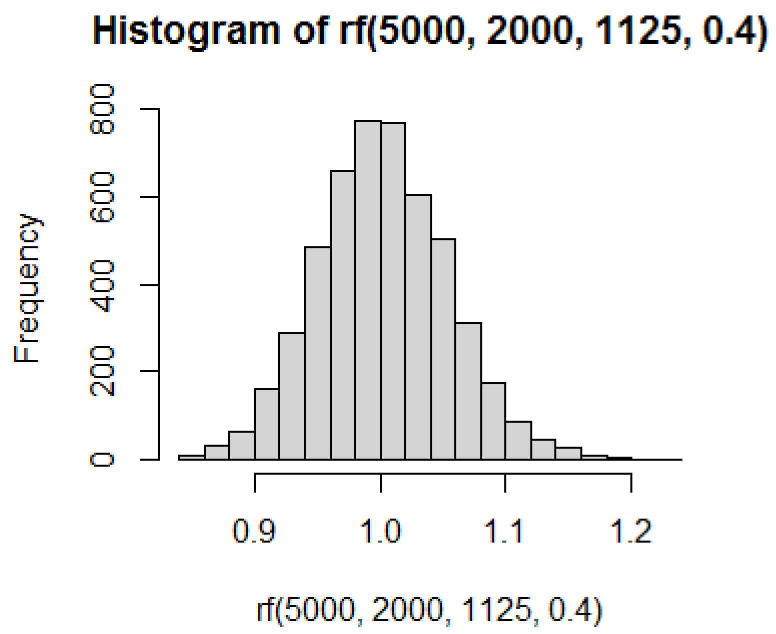

```
> hist(rf(5000, 20, 50, 20))
```



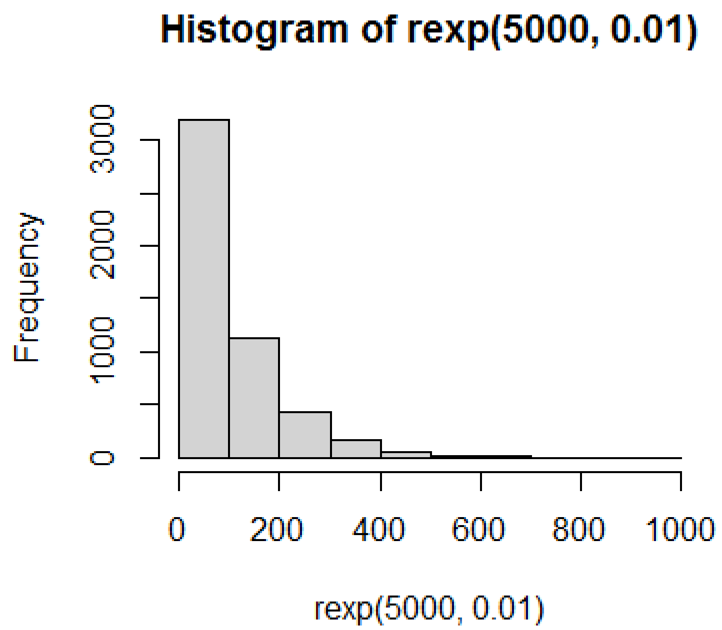

```
> hist(rf(5000, 100, 150, 200))
```



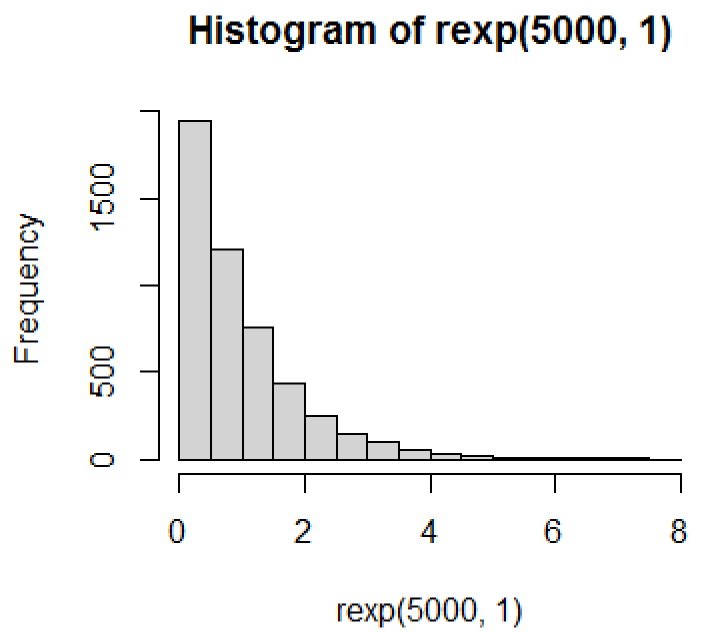

```
> hist(rf(5000, 2000, 1125, 0.4))
```



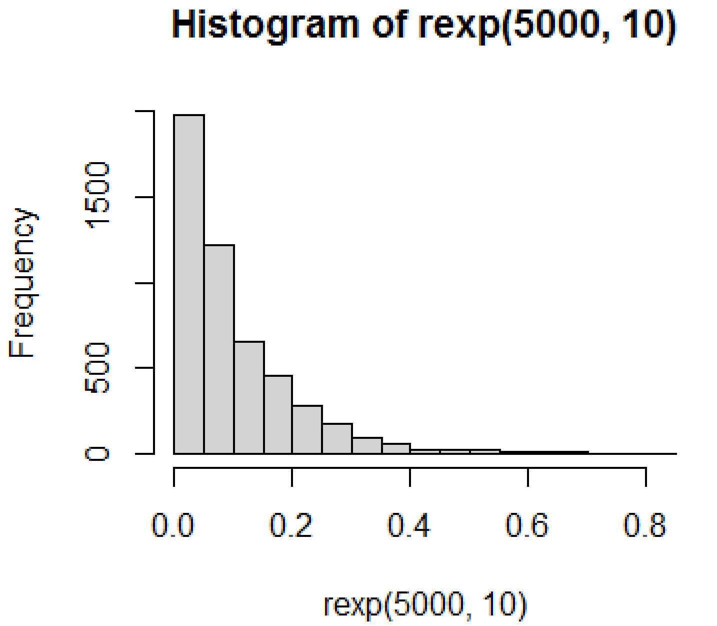

```
> # Exponensial
> hist(rexp(5000, 0.01))
```



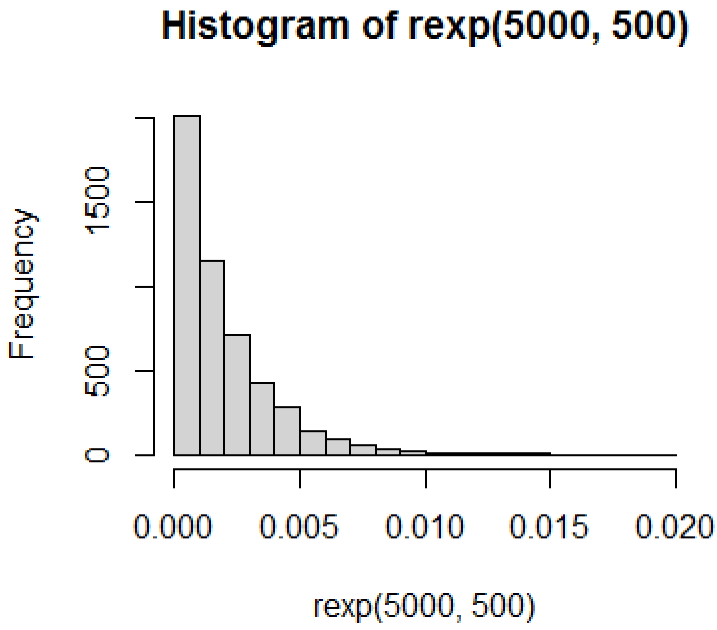

```
> hist(rexp(5000, 1))
```



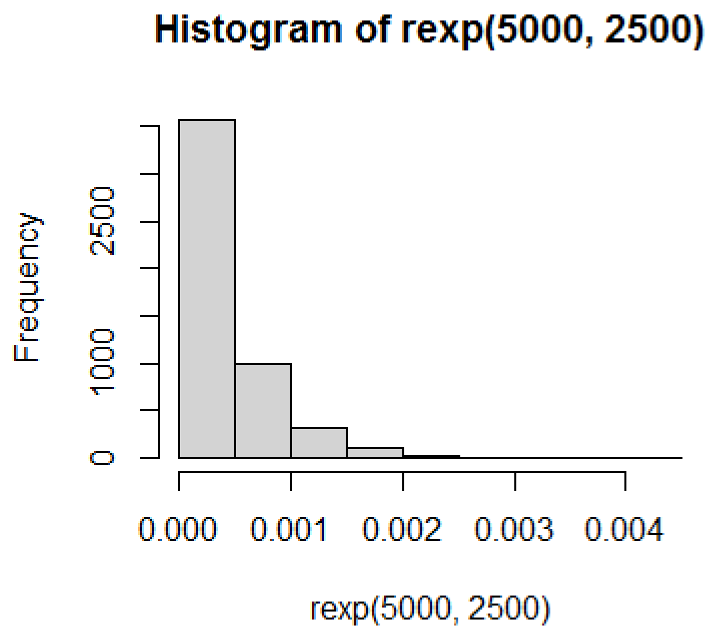

```
> hist(rexp(5000, 10))
```



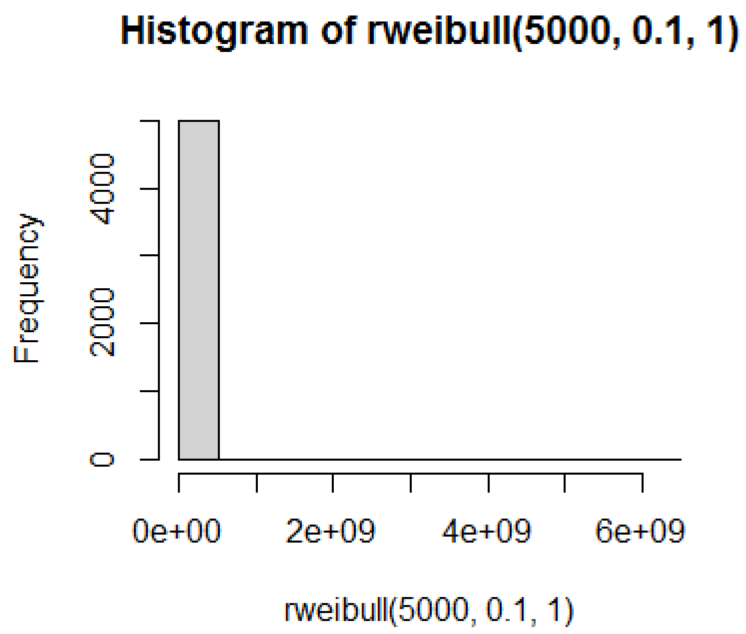

```
> hist(rexp(5000, 500))
```



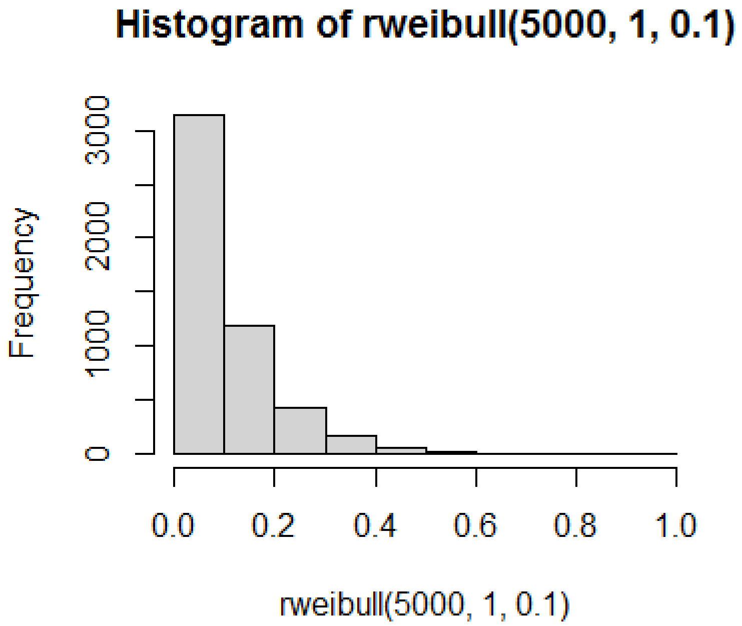

```
> hist(rexp(5000, 2500))
```



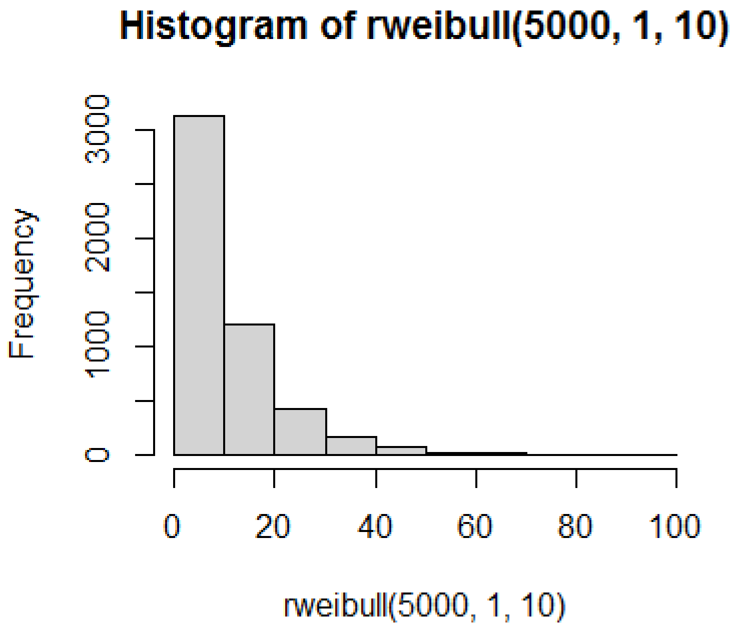

```
> # Weibull
> hist(rweibull(5000, 0.1, 1))
```



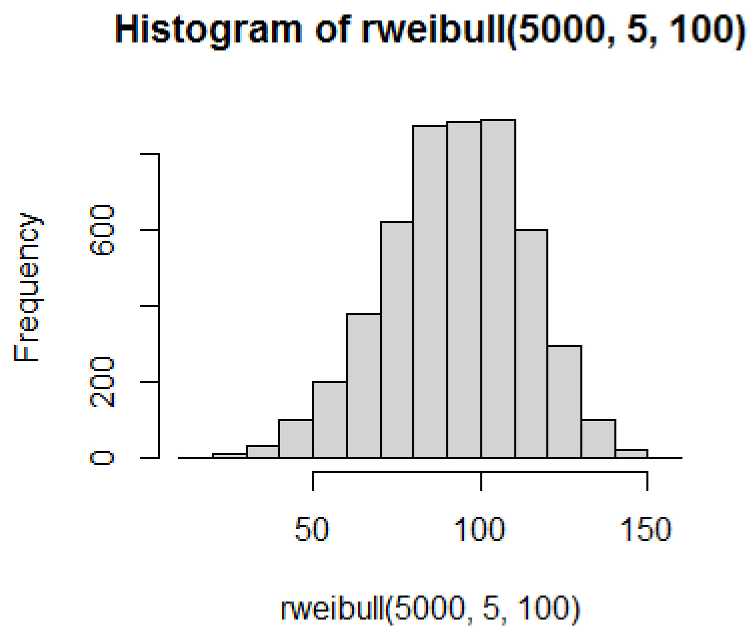

```
> hist(rweibull(5000, 1, 0.1))
```



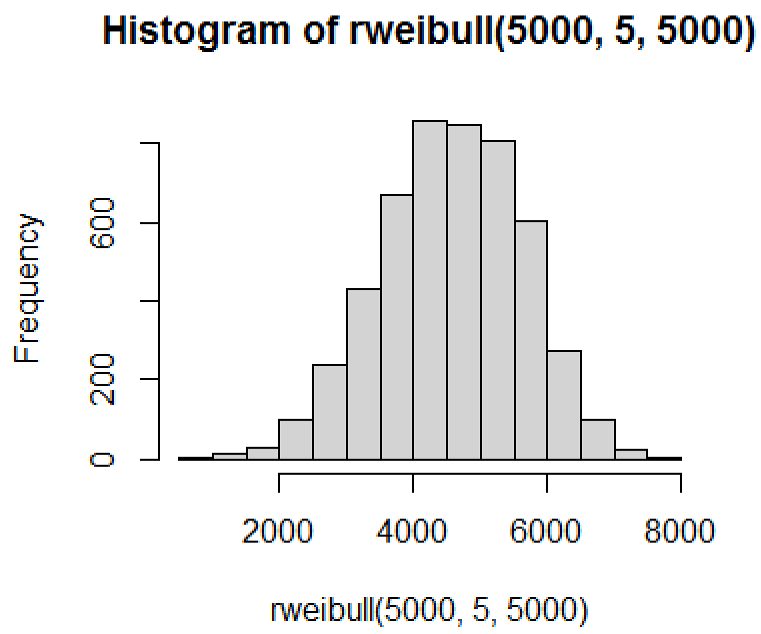

```
> hist(rweibull(5000, 1, 10))
```



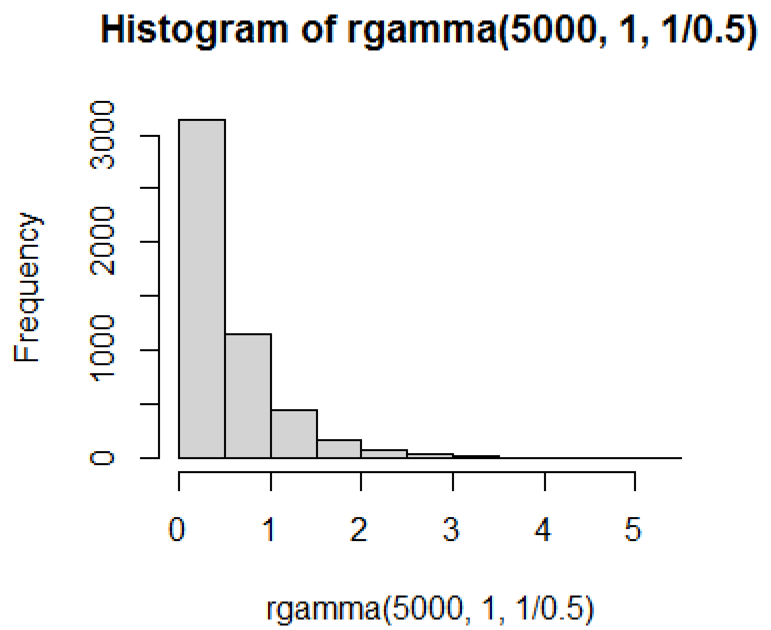

```
> hist(rweibull(5000, 5, 100))
```



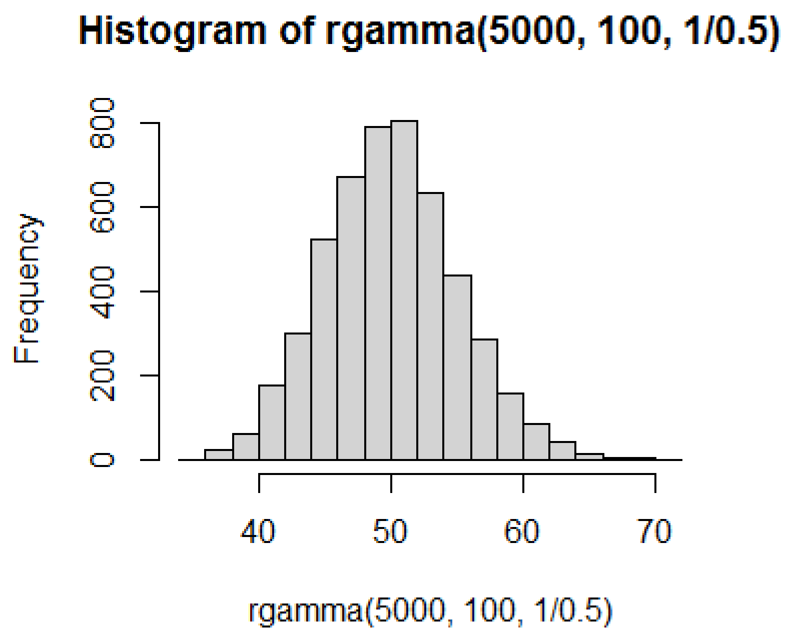

```
> hist(rweibull(5000, 5, 5000))
```



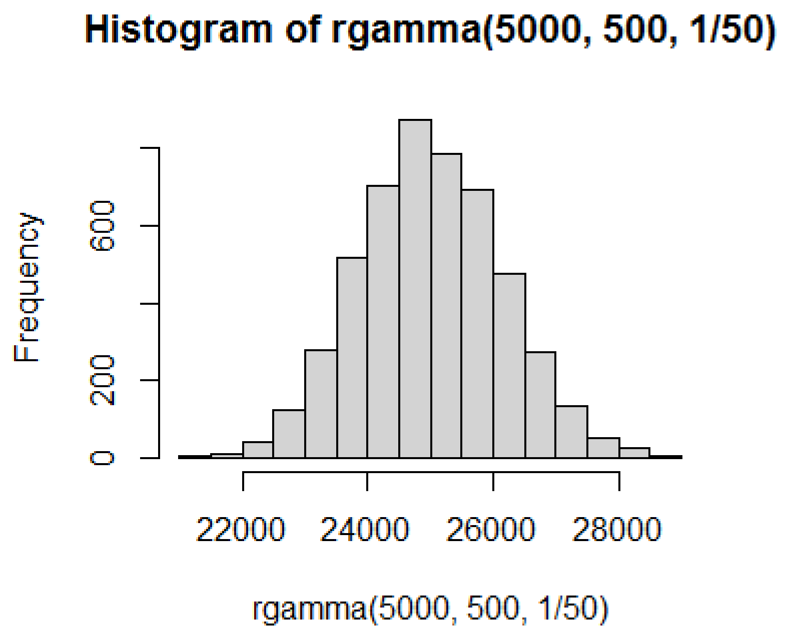

```
> # Gamma
> hist(rgamma(5000, 1, 1/0.5))
```



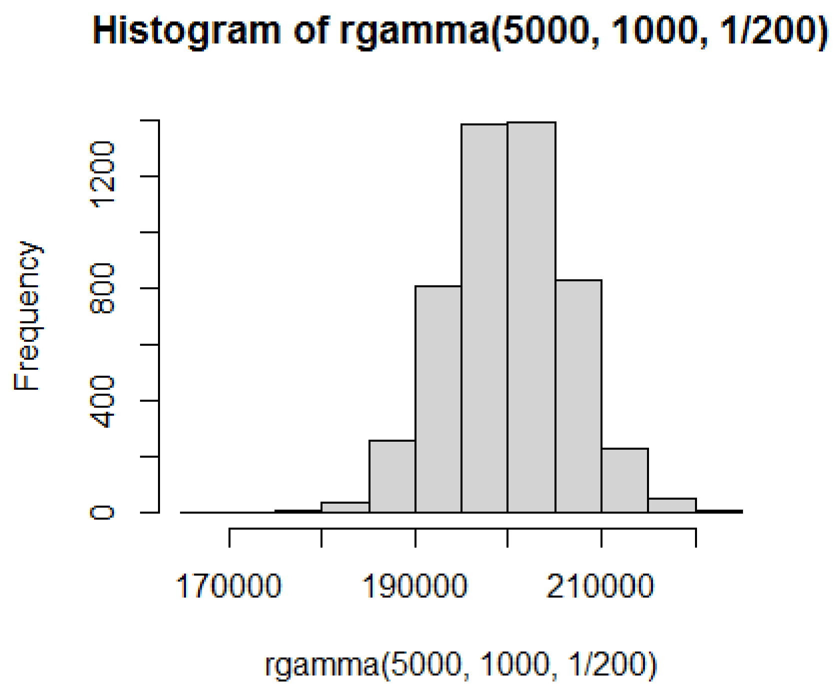

```
> hist(rgamma(5000, 100, 1/0.5))
```



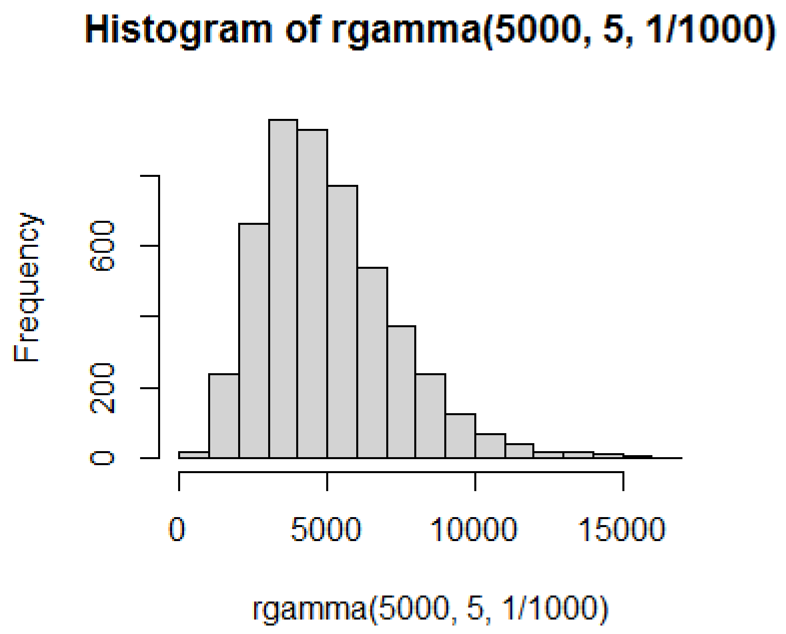

```
> hist(rgamma(5000, 500, 1/50))
```



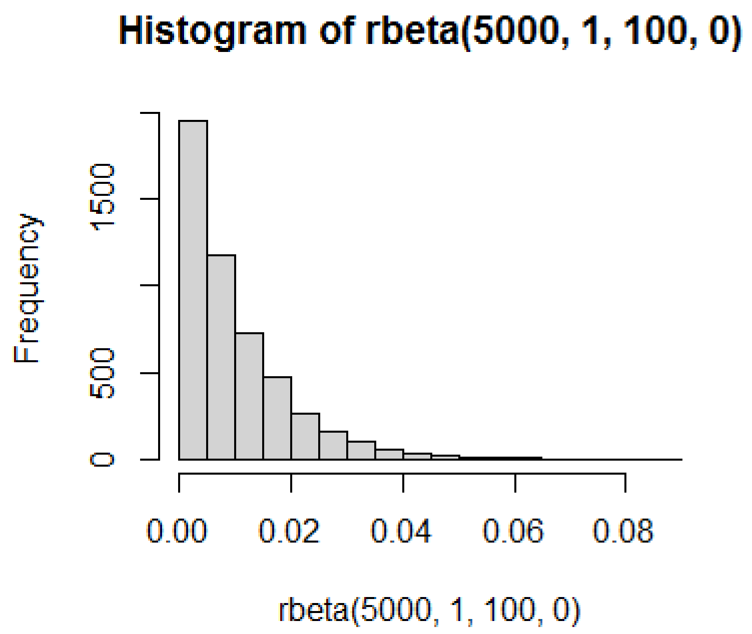

```
> hist(rgamma(5000, 1000, 1/200))
```



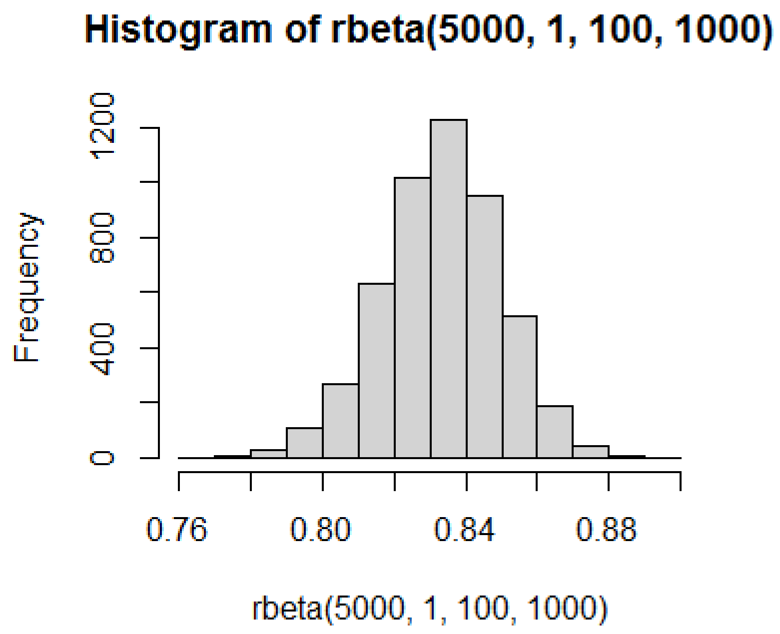

```
> hist(rgamma(5000, 5, 1/1000))
```



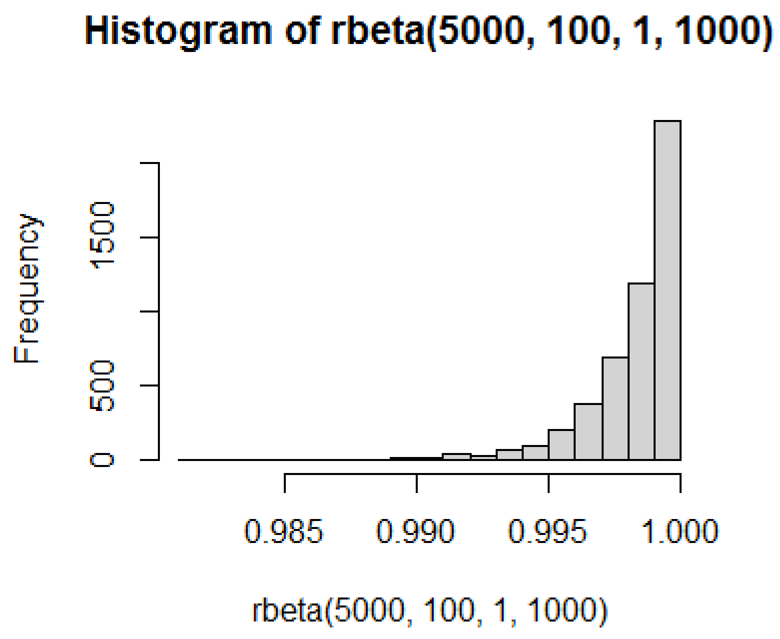

```
> # Beta
> hist(rbeta(5000, 1, 100, 0))
```



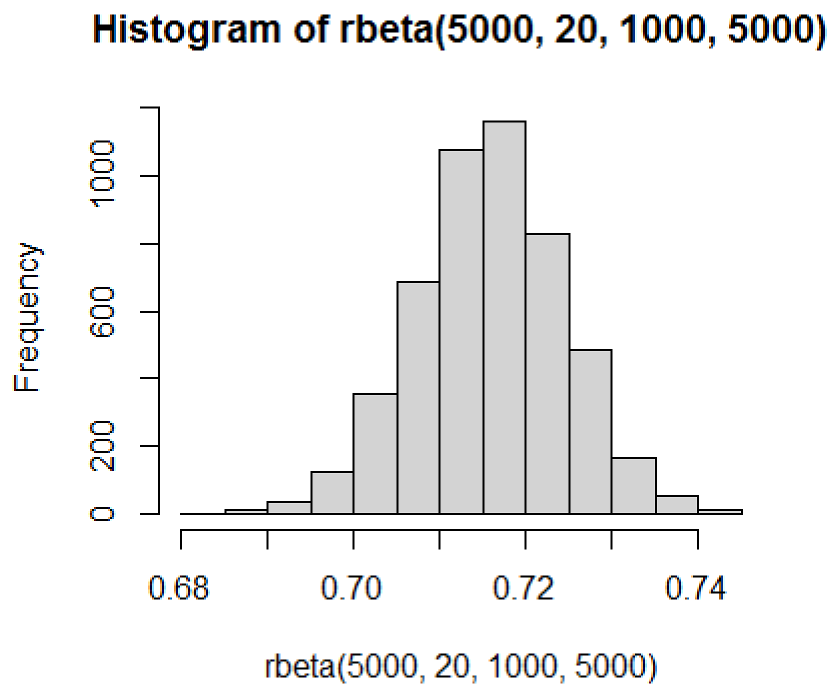

```
> hist(rbeta(5000, 1, 100, 1000))
```



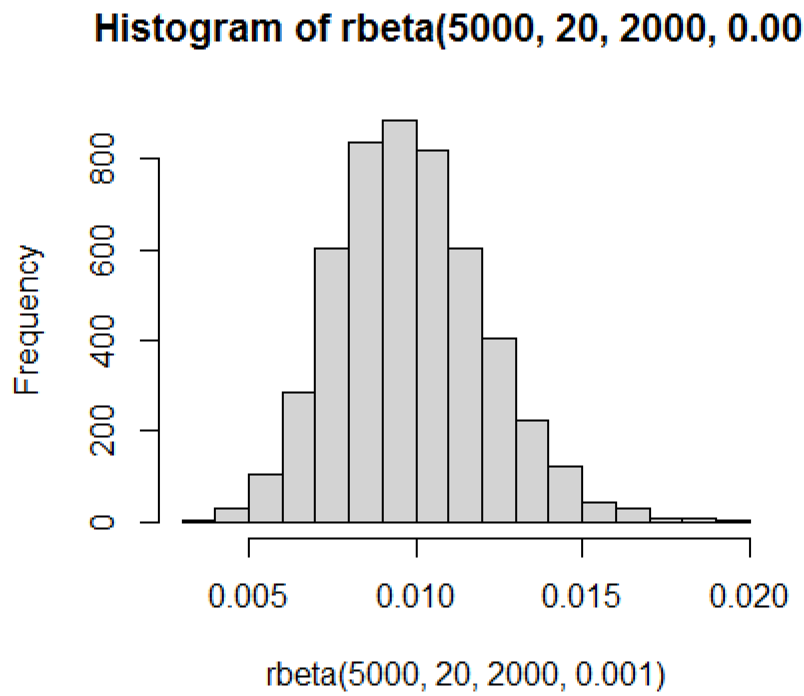

```
> hist(rbeta(5000, 100, 1, 1000))
```




```
> hist(rbeta(5000, 20, 1000, 5000))
```




```
> hist(rbeta(5000, 20, 2000, 0.001))
```



Working Windows